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501.34424CX2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

1/12/04

Applicant(s): H. MURAYAMA, et al

Serial No.: 09/311,952

Filed: May 18, 1999

For: COMPUTER SYSTEM HAVING A PLURALITY OF COMPUTERS EACH PROVIDING A SHARED STORAGE ACCESS PROCESSING MECHANISM FOR CONTROLLING LOCAL/REMOTE ACCESS TO SHARED STORAGE DEVICE (Amended)

Group: 2142

Examiner: H. Nguyen

01/14/04 DA

Please DO NOT ENTER

RESPONSE AFTER FINAL - EXPEDITED PROCEDURE UNDER 37 CFR 1.116

MS AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

January 5, 2004

Sir:

The following is in response to the September 4, 2003 final Office Action in which the Examiner finally rejected now pending claims 88-104.

In the September 4, 2003 final Office Action the Examiner rejected claims 88-99 and 104 under 35 USC §103(a) as being unpatentable over Crawford (U.S. Patent No. 5,771,354) in view of Attanasio (U.S. Patent No. 5,668,943) and rejected claims 100-103 under 35 USC §103(a) as being unpatentable over Crawford and Attanasio in view of the Examiner's alleged well-known feature of a computer program product. These rejections are traversed for the following reasons. Applicants submit that the features of the present invention as now recited in claims 88-104 are not taught or suggested by Crawford, Attanasio or

the alleged well-known feature of a computer program product whether taken individually or in combination with each other as suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw these rejections.

In the September 4, 2003 final Office Action the Examiner acknowledges in the paragraph bridging pages 3 and 4 of the Office Action that:

> "Crawford does not explicitly disclose a disk request processing section for processing said disk request issued to said plurality of shared disk, wherein said disk request processing section processes said disk request to determine whether said disk request requests access to a shared disk connected to said computer or request access to a shared disk connected to another computer and sends said disk request to the shared disk connected to said computer if said disk request requests access to shared disk connected to said computer, and sends said disk request to another computer to access a shared disk connected to said another computer if said disk request requests access to the shared disk connected to said another computer".

The Examiner upon recognizing the above noted lack of teaching of the features of the present invention in Crawford, attempts to supply such deficiencies from one of the other references of record. Particularly, the Examiner looks to the teachings in Attanasio to supply the above described deficiencies in Crawford. Thus, the Examiner alleges that:

> "Attanasio discloses (e.g., accessing shared disk on computer network), applications running on any node can issue I/O request for any disk, as if all disk were attached locally. Logic for handling a request at the node of origin is shown in Fig. 3. When the request is issued (block 700) the aforementioned map, 250-K-B, is checked to determine which has the primary tail (block 710). If the node or origin is also the server node (i.e., holds the primary tail), the request is serviced locally (block 715). If the server node is different from the node of origin, a request descriptor is sent to the server node (block 720). If the request

is a write request (determined in block 730), the data to be written is also sent to the server (block 740). (Attanasio, col. 3, line 59-col. 4, line 4)".

Therefore, the Examiner alleges that the above described teachings of Attanasio supplies the deficiencies of Crawford relative to the features of the present invention as recited in the claims.

Applicants do not agree with the above noted allegations by the Examiner and note that it appears that the Examiner is attempting to combine references which cannot be combined in the manner suggested by the Examiner. In other words, the teachings of the Crawford and Attanasio references cannot be physically combined since they are each directed to systems which are entirely different from each other. In other words, these systems cannot be combined since they each address completely different problems and include completely different elements that cannot be easily combined without a considerable amount of experimentation on the part of one of ordinary skill in the art.

For example, Attanasio discloses recovery technology for use when a disk access fails in a virtual shared disk system. Attanasio specifically teaches that the disk thereof have some tails connected to several disk drivers of several nodes one of which is the server node. Thus, according to Attanasio the disk access is prosecuted via a primary node and if a failure occurs, a new node becomes "the server" so that an access can be performed with a new path of the new node. The Examiner's attention is directed to col. 3, line 35 through col. 4, line 20 and col. 4, line 59 through col. 5, line 20 and Fig. 9 of Attanasio. Therein Attanasio specifically teaches that plural tails is necessary for the disk thereof in order to achieve the object of the recovery technology as taught by Attanasio.

Thus, in Attanasio the disk must have plural connection interfaces to the disk drivers in order to properly accomplish the recovery technology taught therein.

The above noted teachings specifically provided in Attanasio are particularly relevant since in Crawford a disk cannot be connected to several computers directly. Crawford specifically discloses an internet on-line backup system wherein a replica computer such as that illustrated in Fig. 5 thereof is constructed virtually in a host system of the on-line server system 100 such that the replica computer can be used to control the backup of data. Crawford teaches that the replica computer 160 is not a real (physical) computer which is interconnected to a plurality of other physical computers in a manner such that each computer has connected to it one of the plurality of shared disks as in the present invention. Crawford simply teaches that a data link 150 connects a customer's computer to a replica computer and that such data link 150 is a telecommunications network. Attention is directed to col. 14, lines 21-25 and Figs. 3 and 4 of Attanasio.

Thus, due to the above it would be impossible to combine the teachings of Crawford with the teachings of Attanasio since the teachings of each of the respective references are entirely different from each other. Further, even if the teachings of Crawford and the teachings of Attanasio could be combined in the manner suggested by the Examiner in the Office Action, the combination would still provide a system wherein the disk of the replica computer cannot be connected to the disk driver of the customer computer via the data link 150. Thus, the combination would still not provide a system as recited in the claims of the present application wherein each computer being interconnected to the other computers has directly connected to it the shared disk so that it becomes

necessary to determine when a disk request issued by the computer is to be directed to the shared disk connected to the computer or to a shared disk connected to another computer as in the present invention. Such functionality is certainly not possible nor is it even necessary in the combination of teachings provided by Crawford and Attanasio.

Further, in order for the combination of Crawford and Attanasio to operate in the manner as recited in the claims additional software would be necessary in order for an access to the virtual disk system in Attanasio in order for it to operate in the same manner as in the present invention recited in the claims. Attention is directed to col. 3, lines 34-41 of Attanasio. In Attanasio, a processor controls a disk access and executes the logic as illustrated in Fig. 3 of Attanasio. This logic taught by Attanasio is completely different from the features of the present invention as now more clearly recited in the claims wherein a disk request processing section is provided and such section is separate from the CPU of the computer. Such features are clearly not taught or suggested by the combination of Crawford and Attanasio.

Therefore, the combination of Crawford and Attanasio fails to teach or suggest a disk request processing section for processing the disk request issued to the plurality of shared disk, wherein the disk request processing section processes the disk request to determine whether the disk request requests access to a shared disk connected to the computer or request access to a shared disk connected to another computer and sends the request to the shared disk connected to the computer if the disk request requests access to the shared disk connected to the computer and sends the disk request to another computer to access a shared disk connected to the another computer if the disk request

requests access to the shared disk connected to the another computer as recited in the claims.

The above noted deficiencies of Crawford and Attanasio are also evident in the Examiner's alleged well known feature of a computer program product. Therefore, the combination of Crawford, Attanasio and the alleged teaching of the well known feature of a computer program product fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

In paragraph 18 of the Office Action the Examiner takes official notice of what is well known in the networking art to utilize a computer readable memory containing computer readable instructions for storing and execution of the method and system in order to perform the functional procedures for controlling access to the shared disk connected to the computers. Applicants hereby traverse this official notice and request in accordance with MPEP §2144.03(c) that the Examiner supply "documentary evidence" specifically a reference documenting that such teaching is in fact "common knowledge or well-known in the art".

However, even if the above noted teaching is well known it still fails to teach or suggest the above described features shown above to deficient in the combination of Crawford and Attanasio. Therefore, combining the teaching of the alleged well known feature of a computer program product with the combination of Crawford and Attanasio still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

Accordingly, based on the above, Applicants respectfully request the Examiner to reconsider and withdraw the above described rejections of claims 88-104 as being unpatentable over the combinations of Crawford, Attanasio and

the alleged well known feature of a computer program product under 35 USC §103(a).

The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references utilized in the rejection of claims 88-104.

In view of the foregoing amendments and remarks, Applicants submit that claims 88-104 are in condition for allowance. Accordingly, early allowance of claims 88-104 is respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (501.34424CX2).

Respectfully submitted,

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